

Administration

NOV **8** 1989

400 Seventh St., S.W. Washington, D.C. 20590

REFER TO: HNG-14

John F. Boozer, III, P.E. Product Development Engineer Shakespeare Products Group Route 3, P.O. Box 733 Newberry, South Carolina 29108

Dear Mr. Boozer:

This is in response to your letters of May 30 and August 9 to Mr. Thomas 0. Willett in which you requested Federal Highway Administration (FHWA) acceptance of your company's anchor base light poles when used with "Pole-Safe" breakaway support couplings. The pole series for which you requested acceptance were the AA, AB, AC, and AD series with luminaire mounting heights of 39 to 47 feet and with mast arms up to 15 feet in length. Your letter transmitted the Pendulum Test Report of Luminaire Support Pole with Anchor Base Test No. A-6 conducted by the Southwest Research Institute. It was accompanied by detailed information on the manufacture of the poles and catalog pages showing the subject poles. You also submitted supplemental information, received July 17 and October 17, which included design drawings of the coupler and the anchor base.

The test article was a series AD-45 pole with a single 8-foot mast arm. The base casting was 12 inches high as specified for all poles in this height range. Other details of the tested hardware are shown in Enclosure 1 which consists of a drawing of the tested pole and base, and a drawing of the tested breakaway coupler. The test used an instrumented 1,800-pound pendulum fitted with a 10 stage crushable nose which simulates a 1979 Volkswagen Rabbit. Test results including measured and extrapolated velocity changes are shown below:

Change in velocity, 20 m.p.h. test	7.8 feet-per-second
Change in velocity, 60 m.p.h. calculated	9.4 feet-per-second
Stub height	4.0 inches
Weight of test article	444 pounds
Bolt circle diameter	15.5 inches .

Through discussions with you, and from reviewing the test data, including the test films, we have determined that the base casting design is critical for proper breakaway performance of poles in the 39 to 47-foot range. Your part number 37-60-0213-10 (shown in a drawing dated 3-14-88) is the base specified for the poles for which you have requested acceptance. This base is 12 inches high, with a bottom flange thickness of 1 3/4 inches and a minimum socket wall thickness of 0.445 inches, (57/128 inches).

Your letter requested acceptance for poles to be used with arms up to 15 feet in length. Calculations you submitted earlier indicate that such mast arms have a minimal effect on the velocity change during an impact. Therefore, our acceptance includes poles with up to two 15-foot mast arms. This would permit a total weight of pole, arms, and luminaires of 510 pounds.

The information discussed above shows that the actual tests and calculated changes in velocity of the pole-base combinations for which you have requested acceptance meet the change in velocity and stub-height requirements adopted by the FHWA. Therefore, they are acceptable for use on Federal-aid projects when requested by a State. Enclosure 2 consists of catalog pages showing the acceptable poles.

This acceptance is limited to breakaway characteristics of the pole-base-coupling combination and does not cover the structural capacity of the combination. Presumably, you will supply potential users with sufficient information on structural design and installation requirements to ensure proper performance. We anticipate that the States will require certification from Shakespeare that the poles (including bases and mast arms) and couplings furnished have essentially the same chemistry and mechanical properties as those used in the tests and geometries consistent with those herein accepted, and that they will meet the FHWA change in velocity requirements.

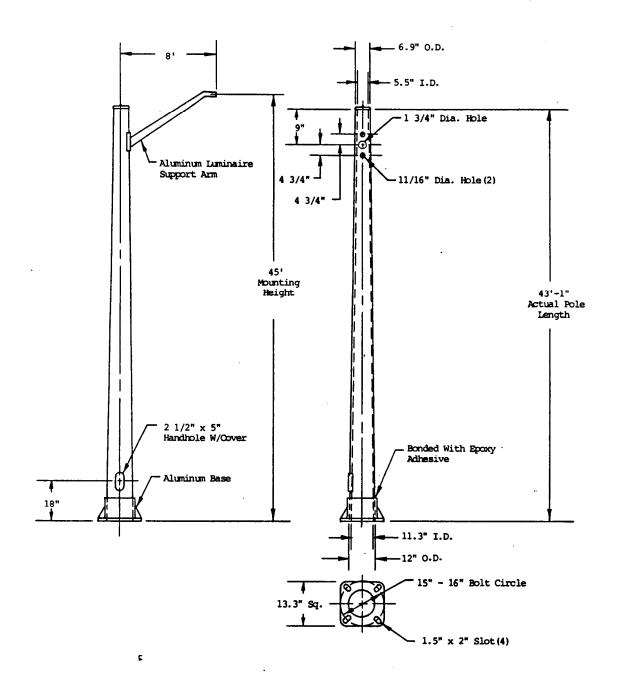
Sincerely yours,

J. a. Starm

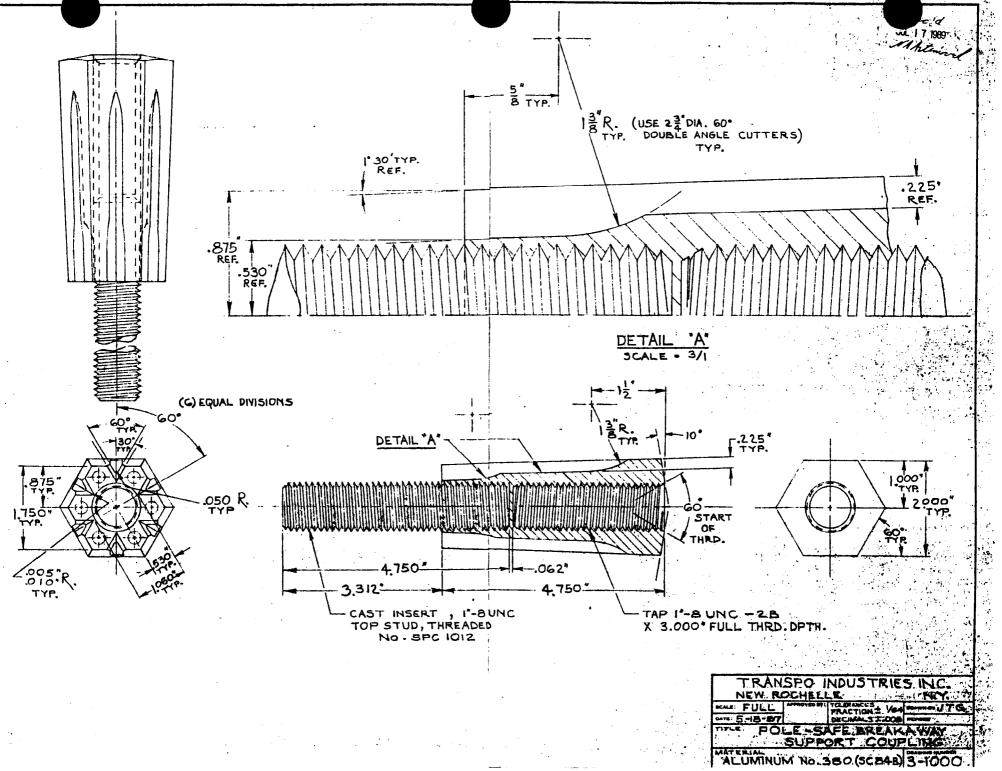
L. A. Staron

Chief, Federal-Aid and Design Division

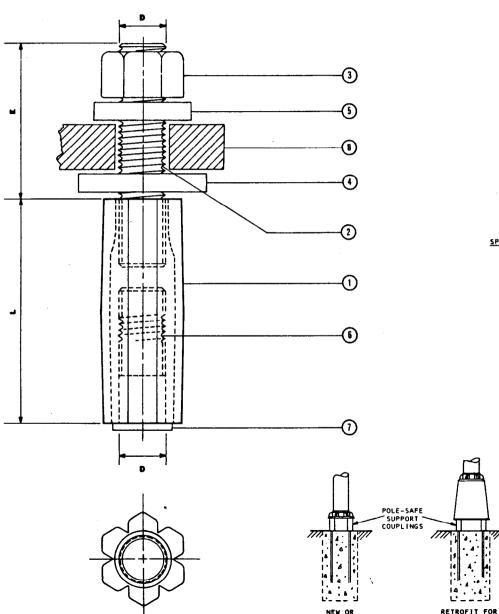
1- Weight: 397 lbs. Including Arm2- Catalog Number: AD45-18N5BB01



ITEM	PART NUMBER			DESCRIPTION	MATERIAL	
LET	WAS	BY	DATE	SAMPLE MUST BE APPROVED AS INDI- CATED SELOW BEFORE PROCEEDING WITH FABRICATION.	Shakespears Electronic Fiberglass	Division
				QUAL APPROVAL ENG. APPROVAL YES NO D VES NO D	AD45' Anchor Base, Capped L	ight Poles,
				ALL DMENSIONS AND SPECIFIED PITS ARE FOR PINISHED PARTS AND MUST BE MET AFTER PINISH IS APPLIED.	Predrilled For Arm	
				UNLESS OTHERWISE SPECIFIED DIMEN- SIONS ARE IN INCHES TOLERANCES: DECIMALS 2 .008 FRACTIONS 2 1/64	USED ON PC. NO.	date 9.21.6.



(SEE DRAWING NO. 3-1000 FOR COUPLING DIMENSIONS)



RETROFIT

"POLE-SAFE" ALUMINUM DIE CAST COUPLING

THREADED STUD - STAINLESS STEEL

HEX NUT OR ALUMINUM TORQUE LIMITING NUT

4 FLAT WASHER 2 3/4"O.D. (WILL ACCOMMODATE 1 5/16" MAX. BASE SLOT WIDTH)

FLAT WASHER 2"O.D. (WILL ACCOMMODATE 1 5/16" MAX. BASE SLOT WIDTH)

6 INSIDE THREAD FOR ANCHOR BOLT - ANCHOR BOLT LENGTH REQUIRED ABOVE FOUNDATION: 2 1/2" TO 3"

7) COUPLING SPACER SKIRT

POLE BASE PLATE - ASSEMBLY WILL ACCOMMODATE 1 1/2"
MAX. BASE PLATE THICKNESS

NOTE: MATERIALS SHALL BE AS PER MANUFACTURER'S SPECIFICATIONS

SPECIAL INSTALLATION NOTE: SUPPORT COUPLING IS TO BE INSTALLED 1/8" TO 3/8" OFF THE FOUNDATION. COUPLING CAN BE ADJUSTED FOR LEYELING WITHIN THIS RANGE.

NO. DESCRIR OF REVISION

T-BASE



Series AA, AB, AC, AD, AH, AL and AS

Shakespeare

POST TOP Fiberglass ANCHOR BASE LIGHT POLES

Series AA, AB, AC, AD, AH, AL and AS

P.2/E

HOUMAL			POLED	IAMETER	STANDARD		RECOMM	MDED TOTAL	LOADING			
IOUNTING HEIGHT	SHAFT LENGTH	WEIGHT	SHW/T TOP	SHAFT	HANDHOLE LOCATION FROM BASE	WEIGHT	ESV.	90 MPH EPA*	106 MPH EPA*	128 MPH EPA*	9OLT HOLE CIRCLE	CATALOG NUMBER
(FT)	(FT)	(LBS)	(MI)	(94)	(IN)	(LBS)	(\$0 FT)	(50 FT)	(SO FT)	SO FT	L	ļ
5	- 25	129	6.2	96	10	300	14.9	11.5	9.0	5.4	14"	AA23
	23	175	6.4	97	10	300	23.2	10.2	14.3	9.0	14"	AB25
			,									
	30	206	-6.4	10.4	18	300	19.7	15.2	11.7	7.1	14%	AB30
0	- 30	237	-66	10.5	18	300	28.7	22.4	17.4	11.0	4414.11	AC30
0-	30	285	0.9	10.0	10	900	57.4	-29.1	22.9	14.0	141/2"	AD30
5	35	239	0.4	11.1	10	300	14.3	10.8	7.8	4:0	15"	AB35
	-	1	0.6	11.2	18	300	218	10.0	12.5	7.2	15"	ACSS -
	35	276										4
	- 55	332	6.9	11.3	10	- 300	29.0	221	17.0	10.3	15"	AD35
6	- 95	332	69	11.3	18					103	'	AD35
)	- 35	332 204	6.2		18	300 300	6.4	43	170 2.4 6.0		15" 151%" 151%"	4
0	- 95	332 204 277	69	11.7	-	300	6.4	4.3	2.4	I =	151/2"	A033
6 0 0	40 40	332 204	6.2 6.4	11.7	18	300 300	6.4 12.2 19.2 25.8	4.3 8.8 14.1 19.3	2.4 6.0 10.4 14.3	25	15%" 15%" 15%" 15%"	AD33 AA40 AB40 AC40 AD40
40 40 40 40 45	40 40 40 40 45	204 277 319 383 226	6.2 6.4 6.6 6.9 6.2	11.7 11.8 11.9 12.0 11.7	18 18 18 18	300 300 300 300 300	6.4 12.2 19.2 25.8 3.9	4.3 8.8 14.1 19.3 2.2	2.4 6.0 10.4 14.3	25 5.4 8.3	15%" 15%" 15%" 15%"	AA40 AB40 AC40 AD40 AA45
40 40 40 40 45 45	40 40 40 40 45 45	204 277 319 383 226 308	6.9 6.2 6.4 6.6 6.9 6.2 6.4	11.7 11.8 11.9 12.0 11.7	18 18 18 18 18	300 300 300 300 300 300	6.4 12.2 19.2 25.8 3.9 9.1	43 88 14.1 193 2.2 6.2	2.4 6.0 10.4 14.3 6 3.8	25 54 83 -	15%" 15%" 15%" 15%" 15%"	AA40 AB40 AC40 AC40 AA45 AB45
35 35 40 40 40 45 45 45	40 40 40 40 45	204 277 319 383 226	6.2 6.4 6.6 6.9 6.2	11.7 11.8 11.9 12.0 11.7	18 18 18 18	300 300 300 300 300	6.4 12.2 19.2 25.8 3.9	4.3 8.8 14.1 19.3 2.2	2.4 6.0 10.4 14.3	25 5.4 8.3	15%" 15%" 15%" 15%"	AA40 AB40 AC40 AD40 AA45

			POLE	MANETER	CONCINES		RECOMM	ENGEO TOWN	LONOME			
MOMINAL MOUNTING HEIGHT (FT.)	SHAFT LENGTH . (FT.)	WEIGHT (LIIS)	SHAFT TOP (ML)	BINFT BISSE (M)	HANDHOLE LOCATION FROM BASE (PL)	WEIGHT (LOS.)	80 MPH EPA* (80. FL)	SO MPH EPA* (BOL FE)	100 MPH EPA* (SQ. FT.)	120 MPH 29N* SQ. FT.)	HOLE CINCLE	CHINLOG
47	47	235	6.2	11:7	18	300					15 ¹ 2"	AA4 7
47	47	320	6.4	11.8	18	300					15 V2"	AB4 7
47	47	370	6.6	11.9	18	300					15 2	AC47
47	47	445	6.9	12.0	18	300					15 12"	AD47

SEP NO 189 13:35 SHAKESPEARE (BRG)276-8940

SHAFT LENGTH

**Do Not Use For Side Mount Applications — See AO Series
**Do Not Use With Tenon Mounted Arms — See AO Series

HANDHOLE: Standard 2½" × 5"
Optional 2½" Round, or 4" × 6" on Some Models

TENONS: 214", 3", or 4" on Some Models

All poles are individually wrapped. Anchor bolts standard. Bult povers and base shrouds optional...see accessories.

"EPA ratings for copped pole ure some as fir tenen pole.
"EPA recommendations are calculated per AABITIO Standards and include a 38% guilt factor.

PT-2-00

*EPA ratings for capped pole are same as for tenon pole.

*EPA recommendations are calculated per AASHTO Standards and include a 30% gust factor.

See Catalog Sheet GI-4 for base dimensions.

Shakes re

4 ft. MAST ARM **FIBERGLASS LIGHT POLES**

Series AO, AA, AB, AC, AH and BS

Shakespeare

CATALOG SHEET MA 2

GEP NO 139 (3136 SHIKESPENE (603)276-654 FIBERGLASS LIGHT POLES

ries AB, AC, AH and BS

CATALOG SHEET MA-2

	T		POLE D	AMETER	AMETER STANDARD		INDED MAX S				
MOMINA MOUNTIN HEIGHT (FT.)		(LBS.) (LBS.) (NCLUDES ARM(S)	SHAFT TOP (RL)	SHWFT	HANDHOLE LOCATION FROM BASE (IN)	WEIGHT	89 MPH EPA* (SQ. FT.)	90 MPH EPA' (SO, FT.)	188 MPH EPA* (SQ. FT.)	BOLT HOLE CIRCLE	CATALOG Number

LIGHT POLE WITH ONE MAST ARM

40	39'6"	200	6.2	11.7	18	75	3.2*	3.2*	2.4	15%"	AA40-14
40	39'6"	272	6.4	11.8	18	75	3.2"	3.2*	3.2*	15%"	AB40-14
45	44'6"	230	6.2	11.7	18	75	3.2*	2.3	0.6	15%*	AA45-14
45	44'6"	309	6.4	11.8	18	75	3.2*	3.2*	3.2"	15%"	AR45-14

LIGHT POLE WITH TWO MAST ARMS

25	24'8	138	8.2	9.0	18	75	3.2	3.2	3.2	14"	AA25-24	_
							-					

- 35	34'6"	245	44	444	44				4.00	488	Aper or
_~	1 040	240	0.4	11.1	10	13	3.2	J.Z	3.6	19	AD30-24
40	39'6"	207	6.2	11.7	18	75	2.7	1.6	0.6	15%"	AA40-24
40	39'6"	279	6.4	11.8	18	75	3.2"	3.2"	2.4	15%"	AB40-24
40	39'6"	322	6.6	11.9	18	75	3.2"	3.2*	3.2°	15%"	AC40-24
45	44'6"	314	6.4	11.8	18	75	3.2*	2.5	1.3	15%"	AB45-24
45	44'6"	361	6.6	11.9	18	75	3.2*	3.2°	3.2*	15%"	AC45-24

All poles are individually wrapped. Aluminum cap, 2%" × 5" handhole, and ancher botts standard. Bolt covers (on some models) and base shrouds (for all models) are optional . . . see accessories. Optional: 4" × 6" handholes available on all but AO Models.

*Poles are not rated above 3.2 EPA as the mast arms are not rated for luminaires greater than 3.2 EPA. EPA recommendations are calculated per AASHTO Standards and include a 30% gust factor. See Post Top section for EPA ratings without arms. MAST APM MATERIAL—ALUMINUM MA-2-80

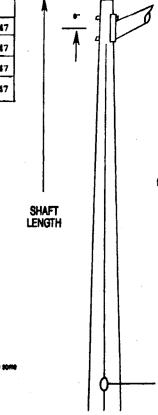
O → NUT	V61	0	18" STD.
WASHER BOLT	For Anchor See Ca	Base Dimer	

SHAFT

LENGTH

See TEST DATA & ACCESSORIES Section for Mast Arm and attachment hardware part numbers.

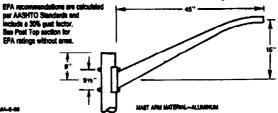
			POLE DIMMETER		STANDARD	RECOMM	DIDED MAX S	UMBWIE		į	
HEGHL HEGHL HOMMHE HOMME	SHAFT LENGTH (FT.)	WEIGHT (LISE.) INCLUDES APM(S)	SMAFT TOP (RL)	SHIFT BARE (PL)	LOCATION PRON BASE (RL)	WEIGHT (LINL) PER LUNA	SOLFT)	SO PET (SEC FEL)	100 MPH EPA' (80) FFT)	HOLE	CATALOS
47	46'6"	241	6.2	11.7	18	75				15 12"	AM7
4 7	46'6"	323	6.4	11.8	18	75				1512	1.B47
47	46'6"	372	6.6	11.9	18	75				151/2	AC47
47	46'6"	447	6.9	12.0	18	75				151/2"	AD47



All poles are individually wrapped. Aluminum cap, 2N° × 5° handhole, and ensher balls standard. Bolt covers (on some models) and base shrouds (for all models) are optional . . . see accessories.

Optional: 4° × 5° handholes evalidate on all but AO Models.

Poles are not raied above 3.2 EPA as the mest arms are not rated for luminaires greater than 3.2 EPA.





For Anchor Base Dimensions See Catalog Sheet GI-4

See TEST DATA & ACCESSORIES Section for Mast Arm and attachment hardware part members.

Shakespaire

FIBERGLASS LIGHT POLES

Series AO, AA, and AS

CATALOG SHEET MA-4

	l	· · · · · ·	POLE D	MMETER	STANDARD						
NOMINAL MOUNTING	SHAFT	WEIGHT	SHAFT	SHAFT	HANDHOLE	WEIGHT	80 MPH	90 MPH	100 MPH	HOLE	CATALOG Number
HEIGHT	LENGTH	INCLUDES	10P	BASE	FROM BASE	(LBS)	EPA*	EPA.	EPA*	CIRCLE	
(FT)	(FT)	APM(S)	(84)	(IN)	(PN)	PER LUNE	(SQ FT)	(SQ FT)	(SQ FT)		l

LIGHT POLE WITH ONE MAST ARM

40	38'9"	202	6.2	11.6	18	75	3.2*	3.2*	1.8	151/2"	AA40-16
40	38'9"	272	6.4	11.7	18	75	3.2*	3.2*	3.2*	1514"	AB40-16
45	43'9"	230	6.2	11.7	18	75	3.2*	1.9	0.1	151/2"	AA45-16
45	43'9"	309	6.4	11.8	18	75	3.2*	3.2*	2.3	151/2"	AB45-16
45	43'9"	356	6.6	11.9	18	75	3.2*	3.2*	3.2*	151/2"	AC45-16

I IGHT POLE WITH TWO MAST ARMS

	440	•	4	9	ř	1			4419	1.444
20 200	ž	0.2	š	9	2	3.4	3.6	3.2	17	70723720

	a a late	800	•	44.0	44	-	44			100	40.05.05
30	33.8	230	0.4	11.0	R	75	3.2	3.2	2.0	10	AB33-20
- 95	39'9"	207	6.6	11.1	10	75	9.2*	3.2*	- 9.2	15"	AC35-28
40	38'9"	283	6.4	11.7	18	75	3.2*	3.1	1.7	151/2"	AB40-26
40	36'9"	324	6.6	11.8	18	75	3.2*	3.2*	3.2"	151/2"	AC40-26
45	43'9"	320	6.4	11.8	18	75	32"	1.9	0.7	151/2"	AB45-26
45	43'9"	366	6.6	11.9	18	75	3.2*	3.2*	2.6	151/2"	AC45-26
45	43'9"	436	6.9	12.0	18	75	3.2*	3.2*	3.2*	151/2"	AD45-26

LIGHT POLE WITH FOUR MAST ARMS

25 239 163 62 94 16 75 32 30 2.1 14 AA2346												
25 25 105 02 31 10 75 12 12 17 77 12 12 12 12 12 12 12 12 12 12 12 12 12	- 94	9999	103			- 10	74	32	\$	*		4429:46
- AC - COLON - CA - CA - CA - TA - TA	- 23	235		Q.E	3.7				30	E		7712570
	25	23'9"	200	8.1	9.5	18	75	3.2	3.2	3.2	14"	A023-40

ľ	50 20'9" 250	64	10.3	18	75	-9.2	3.2"	3.1	141/2"	AD00-16
·								•		

00 0000	A 400	40	75 0.00	0.04	4 444" ADGG 40.
200 200 200	0.4	10	73 3.2	3.5	1 1472 10000-10

35 359" 367 0.0 11.1 10 75 3.2" 3.2" 3.2" 15" AC35-40-(See other side for additional product information)

See TEST DATA & ACCESSORIES Section for Mast Arm and attachment hardware part numbers.

For Anchor Base Dimensions See Catalog Sheet GI-4

SHAFT LENGTH

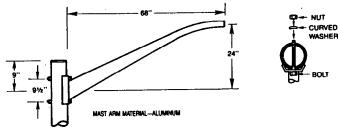
RECOMMENDED MAX. SIZE OF EACH LUMINAIRE POLE DIAMETER 8QU HOLE NOMINAL MOUNTING HANDHOLE WEIGHT (LOS) PER LUM SIMPT TOP (M) SHAFT BASE (BL) SO MEN 99 MPH SHAFT LENGTH (LBS) EPA* EPA* EPA * CIRCLE HEIGHT MCLUDES FROM BASE (SO.FT) (SO.FT) (SO.FT) (M) (FT) (FT)

40	38'9"	303	6.4	11.7	18	75	3.2*	2.1	1.1	151%"	AB40-46
40	38'9"	344	6.6	11.8	18	75	3.2*	3.2*	2.6	151/2"	AC40-46
40	38'9"	412	6.9	11.9	18	75	3.2*	3.2*	3.2*	15%"	AD40-46
45	43'9"	340	6.4	11.8	18	75	2.3	1.3	0.5	151/2"	AB45-40
45	43'9"	386	6.6	11.9	18	75	3.2"	2.9	1.7	151/2"	AC45-40
45	43'9"	456	6.9	12.0	18	75	3.2*	3.2*	3.0	151/2"	AD45-4

All poles are individually wrapped. Aluminum cap, 2½" x 5" handhole, and anchor belts standard. Bolt covers (on some models) and base shrouds (for all models) are optional...see accessories.

Optional: 4" x 6" handholes available on all but AO Models.

*Poles are not rated above 3.2 EPA as the mast arms are not rated for luminaires greater than 3.2 EPA. EPA recommendations are calculated per AASHTO Standards and include a 30% gust factor. See Post Top section for EPA ratings without arms.



See TEST DATA & ACCESSORIES Section for Mast Arm and attachment hardware part numbers.

			MOLE	DAMETER	SNOVO	PECONIN	ENDED MAX S	EE OF SICH	(United by	1	
MOMENTAL MOMENTAL MESONT IFT)	SWFT LENSTH (FT)	NAVES SECTIONS THEORY	SWIT RV RV	SHOFT SHOE FILL	MAKENOLE LOCATION FROM BASE (IN)	WEIGHT (LAS.) PER LUIL	\$9 MPH (SA.* (SQ. FT.)	MO FT)	SP NAME SPA PE)	HOTE HOTE	CAPADE MANGER
47	45'9"	240	6.2	11.7	18	75				1512	AM 7
47	45'9"	322	6.4	11.8	18	75				15 12	AB47
47	45'9"	371	6.6	11.9	18	75				1515	AC47
47	4519"	446	6.9	12.0	18	75				15 12	

18" STD.



CATALOG SHEET MA-6

FIBERGLASS LIGHT POLES

Series AO, AA, AB, AC, AD, AH and AS

			POLE DI	AMETER	STIMOMO	RECOMME	NOED WAX S	ZE OF EACH I	UMNAIRE			
HO-MINAL MOUNTING	SHAFT	WEIGHT (LBS)	SHAFT	SHAFT	HANDHOLE	WEIGHT	80 MPH	90 MPH	100 MPH	HOLE	CABALOG MUMBER	
HEIGHT	LENGTH	#CLUDES	TOP	BASE	FROM BASE	(LBS)	EPA*	EPA*	EPA *	CIRCLE		
l FT)	FI)	APMIS	801	i ann	(Mai	PERLIM	ISO FD	(\$0.FT)	ISO FI	1 1	i '	

LIGHT POLE WITH ONE MAST ARM

40	36'	203	6.2	11.5	18	75	32"	3.1	1.2	151/2"	AA40-18
40	36'	271	6.4	11.6	18	75	3.2°	3.2*	3.2*	151/2"	AB40-18
45	43'	308	6.4	11.8	18	75	3.2"	3.2*	2.7	151/2"	AB45-18
45	43'	354	66	11.9	18	75	3.2	3.2*	32°	151/2"	AC45-18

LIGHT POLE WITH TWO MAST ARMS

~	001	140	60	A.4	4	K	4			-	
-63	20	140	0.2	3.4	- 10	- 2	3.2	J.Z	6.0	177	W23-20
								44	4.04	440	4000 00
25	23'	188	64	95		- 75	3.2	3.2	32	74	AUCUZO

- 25	33'-	250	64	10.9	-10	75	3.2	32	19	15"	AB35-28
- 35	39	267	66	11.0	18	75	8.2*	3.24	3.2*	15"	A035-28
40	38'	284	6.4	11.6	18	75	3.2*	2.4	1.0	151%"	AB40-28
40	38'	325	6.6	11.7	18	75	3.2*	3.2*	32'	151/2"	AC40-28
45	43'	321	6.4	11.8	18	75	2.8	1.3	-	151/2"	AB45-28
45	43'	367	6.6	11.9	18	75	3.2*	3.2*	2.0	151/2"	AC45-28

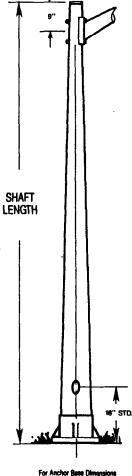
6.9 12.0 18 75 3.2" 3.2" 3.2" 15½" AD45-28

LIGHT POLE WITH FOUR MAST ARMS

45 43' 435

25	- 491	479	- 62	94	18	73	32	25	1.7	1	AA25-48
					-		-	- 0.00		448	1000.00
53		210	0.4	323	10	73	3Z	3.5	3.2.	-	MDZU-40

^{*}Poles are not rated above 3.2 EPA as the mast arms are not rated for luminaires greater than 3.2 EPA. EPA recommendations are calculated per AASHTO Standards and include a 30% gust factor. See Post Top section for EPA ratings without arms.



See Catalog Sheet GI-4

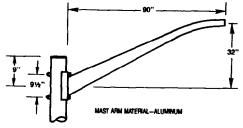
			POLE D	AMETER	STANDARD	RECOMME	NOED WAX. S	IZE OF EACH	LUMINARE		
MOMBA MOUNTH HEIGHT	G SHAFT	MEIGHT (LBS.) MCLUDES APM(S)	SHAFT TOP (BL)	SINFT BASE (BL)	HANDHOLE LOCATION FROM BASE (ML)		BO FT)	SO IT)	100 MPH EPM * (SQ FT)	HOLE CIRCLE	CATALOG HUMBER

- 00	00	074	-	400	44		1 44				
	E0	214	0.0	10.3	10	_ 13	3.2	3.2	3.2	1435	AC30-48

- 35	- 39'	070	64	400	40		1 0.00	- 44	44	Land	4500 10
		Z10	0.4	10.5	10	73	JUZ	5.3	1.3	10	7000940
35	39	513	66	11.0	-18	75	3.2"	3.2	2.9	15"	AC35-46
35	33'	300	8.9	11.1	18	75	3.2"	32	3.2	19"	AD35-48
40	38'	310	6.4	11.6	18	75	2.8	1.6	0.7	151/2"	AB40-48
40	38'	351	6.6	11.7	18	75	3.2*	32	2.1	151/2"	AC40-48
40	38′	410	6.9	11.8	18	75	32"	32"	32	151/2"	AD40-46
45	43'	347	6.4	11.8	18	75	1.9	0.9	-	151/2"	AB45-48
45	43'	393	6.6	11.9	18	75	3.2"	2.5	1.3	1514"	AC45-48
45	43'	461	6.9	12.0	18	75	3.2*	3.2*	25	151/2"	AB45-48

All poles are individually wrapped. Aluminum cap, 21½" x 5" handhole, and anchor bolts standard. Bolt covers (on some models) and base shrouds (for all models) are optional...see accessories. Optional: 4" x 6" handholes available on all but AO Models.

*Poles are not rated above 3.2 EPA as the mast arms are not rated for luminaires greater than 3.2 EPA. EPA recommendations are calculated per AASHTO Standards and include a 30% gust factor. See Post Top section for EPA ratings without arms.





See TEST DATA & ACCESSORIES Section for Mast Arm and attachment hardware part numbers.

	ł	·	FOLE	PHARTER	374040	RECOMM	POD WA	EZ OF BACH	STATE	T	1
HOMENS HEIGHT (FL)	SHAFT LEHSTH (FT)	(LOC) NCLIDES ARMS	SHAFT ICP (ML)	SHOPT SHOPE (PL)	HANDHOLE LOCATION PROM BASE (RL)	WEIGHT (LPA) PER LUM	8 18% (8%* (80. FZ)	80 FED) 80 MAN	80 FD)	CHCYE	CONLOG
47	45	240	6.2	11.7	18	75				1512	AM 7
47	45	320	6.4	11.8	18	75				15 lg	
47	45	369	6.6	11.9	18	75				5/2	
47	45	440	6.9	12.0	18	75				15/2"	

Shakespeare

10 ft. MAST ARM ANCHOR BASE FIBERGLASS LIGHT POLES

Series AA, AB, AC, AD, AH and AS

CATALOG SHEET MA-8

			POLE D	AMETER	STANDARD	RECOMME	NOED WAX S	ZE OF EACH L	UNIVARE		
NOMINAL		WEIGHT			HANDHOLE					BOUT	CAMALOG
MOUNTING	SHAFT LENGTH	(LBS.) INCLUDES	SHAFT	SHAFT	LOCATION FROM BASE	WEIGHT (LBS.)	80 MPH EPA*	80 MPH EPA.*	EPA*	HOLE	NUMBER
(FT)	(FT)	ARM(S)	(HI.)	(14)	(M.)	PER LUM	(SQ FT)	(SQ.FT)	(SQ. FT)		

LIGHT POLE WITH ONE MAST ARM

25 22'8"	125	8.2	0.0	44	 •	į			
	1	-		-	 3.2	3:5	3.2	14	70/25-11

40	37'6"	205	8.2	11.4	18	75	3.2*	2.4	0.5	1515"	AA40-11
40	37'6"	272	6.4	11.5	18	75	3.2*	3.2*	3.2*	151/2"	AB40-11
45	42'6"	232	6.2	11.7	18	75	2.6	0.7	-	151/2"	AM5-11
45	42'6"	309	6.4	11.8	18	75	3.2*	3.2*	2.0	151/2"	AB45-11
45	42'6"	354	6.6	11.9	18	75	3.2*	3.2"	3.2"	151/2"	AC45-11

LIGHT POLE WITH TWO MAST ARMS

25	£5.6.	152	62	9.0	10	75	9.2*	-22	1.0	14"	AA25-21
25	22'6"	193	0.4	94	18	73	321	3.2"	3.2*	14"	AB25-21

80	27'8"	223	8.4	10.1	18	76	32	3.2"	2.0	1414"	AB20-21
	•			•				•	•	-	
- 35	32'0"	257	6.4	10.0	- 10	75	0.2"	-00	1.5	15"	A865-21
-06	92'6"	- 202	-66	10.0	-18	75	32	30.	32	15"	AG36 21
	Lamen	000					1	T	1	1	
40	37'6"	289	6.4	11.5	18	75	32.	1.8	0.3	151/2"	AB40-21
40	37'8"	329	6.6	11.6	18	75	3.2*	3.2*	2.4	151/2"	AC40-21
40	37'6"	389	6.9	11.7	18	75	3.2*	3.2"	3.2*	1515"	AD40-21
45	42'8"	371	6.6	11.9	18	75	3.2*	3.0	1.2	151/2"	AC45-21
45	42'6"	439	6.9	12.0	18	75	3.2	3.2*	3.0	151/1"	AD45-21

LIGHT POLE WITH FOUR MAST ARMS

75	.00%"	100	8.0	02	- 49	- X		80	4.6	447	1. AAOC 44
EU	LEV	9	O.L	9.0	P	,	u,	£.0	7.5		105041
	0010"	007	64	4	- 10	-	0.04	8.04	- 0	449	A005 44
ε.σ	220	22,	0.7	3	2		9.2	U.E	E.0		MOEGAL
- 25	2015"	250	- 66	3.6	9	76	0.00		0.04	aalt	A005.44
	EE O	- 200	0.0	0.0			0.E	š	3.2	_	HUESTI

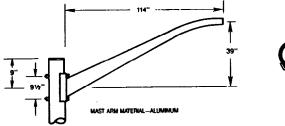
-50	27%"	287	-66-	10.0	-		32	3.2"	3.2"	1416"	AC20-41
36-	32'5"	201	-84	10.8	-19	75	3.2"	2.0	1.0	15"	A836-41
-35	32'6"	326	- 6.6	100	18	76	2.2-	22	28	15"	AC35.41
35	32'6"	378	0.9	11.0	18	75	32"	32*	3.24	15"	AD35-41
40	37'6"	323	6.4	11.5	18	75	32°	2.2	1.1	151/2"	AB40-41
40	376"	363	6.6	11.6	18	75	32"	2.9	1.6	151/2"	AC40-41
40	37'6"	423	6.9	11.7	18	75	3.2"	32"	2.9	151/2"	AD40-41
45	42'6"	405	6.6	11.9	18	75	3.2"	2.0	0.8	1515"	AC45-41
45	42'6"	473	6.9	12.0	18	75	3.2"	3.2*	2.1	151/2"	AD45-41

SHAFT LENGTH 18" STE

For Anchor Base Dimensions See Catalog Sheet GI-4

(See other side for additional product information)

All poles are individually wrapped. Aluminum cap, $2\frac{1}{2}$ " x 5" handhole, and anchor bolts standard. Bolt covers and base shrouds are optional. . . see accessories. Optional: 4" x 6" handholes.





See TEST DATA & ACCESSORIES Section for Mast Arm and attachment hardware part numbers.

			POLE	MAETER	STANDARD	RECOMM	BIOGO MAY &	OE OF BOX	MANAGE	Γ	
HEIGHT HEIGHT FT.)	SHAFT LENGTH (FT)	MERSHT (LIKE) MC2LIDES APRIÇA	SWF TOP (EL)	SWFT MAE (FL)	HANDHOLE LOCATION FROM BASE (FL)	WEIGHT (LIAL) PER LIMIL	867 LC) 884.	leg Lg) Rev. Se man	100 MPT SPA* (800 PT)	CALCTE	CHILOS
47	14'6"	241	6.2	11.7	18	75				15/2	AM7
47	44'6"	323	6.4	11.8	18	75				151/2	AB47
47	14'6"	372	6.6	11.9	18	75				1512	AC47
47	14'6"	447	6.9	12.0	18	75				15 12	AD47

MA-B-I

^{*}Poles are not rated above 3.2 EPA as the mast arms are not rated for luminaires greater than 3.2 EPA. EPA recommendations are calculated per ASSITIO Standards and include a 30% gust factor. See Post MA-a-se Top section for EPA ratings without arms.



CATALOG SHEET MA-10

ANCHOR BASE
FIBERGLASS LIGHT POLES

Series AA, AB, AC, AD, AH and AS

Shakespeare ANCHO CATALOG SHIFT MA 10 FIBERGLA

12 ft. MAST ARM
ANCHOR BASE
FIBERGLASS LIGHT POLES

`eries .A, AB, AC, AD, AH and AS

2.778

			POLE D	AMETER	STANDARD	RECOMME	NOED WAX S	RE OF EACH	UMNAIRE		
NOMMAL MOUNTING HEIGHT (FT)	SHAFT LENGTH (FT)	WEIGHT (LBS) INCLUDES AFM(S)	SHAFT TOP (IN.)	SHAFT BASE (IN)	HANDHOLE LOCATION FROM BASE (IN)	WEIGHT	80 MPH EPA* (SO F7)	99 MPH EPA* (SQ:FT)	100 MPH EPA * (SQ. FT.)	BOLT HOLE CIRCLE	CARALOG MUMBER

LIGHT POLE WITH ONE MAST ARM

·										
25 22'	100	62	92	10			2.01	9.04	44"	AAGEAR
L	1 100				13	0.2	U.E	O.E	-	POPEDIE

40	37	205	6.2	11.3	18	75	3.2"	1.9		151/2"	AA40-12
40	37"	272	6.4	11.4	18	75	3.2*	3.2*	3.2"	151/2"	AB40-12
45	42"	309	6.4	11.8	18	75	3.2*	3.2*	15	151/2"	AB45-12
45	42'	354	6.6	11.9	18	75	3.2*	3.2*	3.2*	151/2"	AC45-12

LIGHT POLE WITH TWO MAST ARMS

	22'	150	- 60	0.0		70	2.04	0.7	4.6	448	1100.00
		100	O.E	0.2		10	0.6	2.9	7.5	-	TOTAL DEED
26	22	100			40				444	4 4 19	
1 50	- 22	190	0.4	9.0		75	0.6	72	-32	H"	A325-22-1

	-	000	•	400	4	75		-	1 24	1	4000.00
30	27	223		10:0	10	13	3.2	3.2	2.4	1472	AUGU-EE
20	27	254	22	101	10	70	2.01	2.00	200	4444 17	4000.00
		-6-	0.0	10.1	10	70	- 0.5	0.5	0.5	1472	1000 ZZ
- 05	20	-000		40.7		70	0.04	. 02		4511	ABOT OO
	8	200	0.4	_ 10.7		,.	J.E	5.0	0.3	1.0	MEDOD SE
- 05	- 00	-	9	- 00	40	36	0.00	0.04	2.01	4511	4000.00
33	J.	234	00	00		,	J.E	3.2	0.6	13	MOOD LL

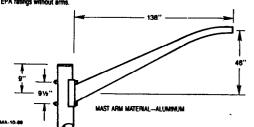
40	37'	292	6.4	11,4	18	75	2.6	1.0	_	151/2"	AB40-22
40	37'	332	66	11.5	18	75	3.2*	3.2*	1.8	151/2"	AC40-22
40	37	390	6.9	11.6	18	75	3.2*	3.2*	3.2°	151/2"	AD40-22
45	42'	374	6.6	11.9	18	75	3.2*	2.3	0.6	151/2"	AC45-22
45	42'	440	69	120	18	75	32.	32'	24	1514"	AD45 22

All poles are individually wrapped. Aluminum cap, 2½" x 5" handhole, and anchor bolts standard. Bolt covers and base shrouds are optional. .see accessories.

Optional: 4" x 6" handhole.

*Poles are not rated above 3.2 EPA as the mast arms are not rated for lumineires greater than 3.2 EPA.

EPA recommendations are calculated per AASHTO Standards and include a 30% gust factor. See Post Top section for EPA ratings without arms.





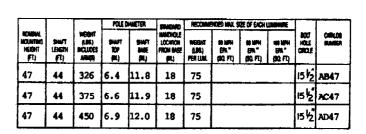
For Anchor Base Dimensions See Catalog Sheet Gi-4

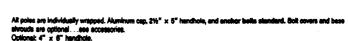
18" STD.

SHAFT

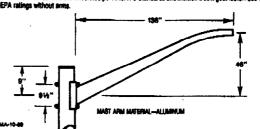
LENGTH

See TEST DATA & ACCESSORIES Section for Mast Arm and attachment hardware part numbers.





*Poise are not rated above 3.2 EPA as the most arms are not rated for luminaires greater than 3.2 EPA.
EPA recommendations are calculated per AASHTO Standards and Include a 30% gust factor. See Post Top section for
EPA ratings without arms.





For Anchor Base Dimensions See Catalog Sheet GI-4

See TEST DATA & ACCESSORIES Section for Mest Arm and attachment hardware part numbers.

SHAFT

LENGTH



CATALOG SHEET MA-12

15 ft. MAST ARM FIBERGLASS LIGHT POLES

Series

AB, AC Shakespeare

SEP 08 '89 13139 SHOK FIBERGLASS LIGHT POLES

Series AB, AC and AD

CATALOG SHEET MA 12

				POLE D	AMETER	STANDARD	RECOMME	NDED MAX. S	IZE OF EACH	UMMAIRE		l
	NOMINAL MOUNTING HEIGHT	SHAFT LENGTH	WEIGHT (LBS) INCLUDES	SHAFT 10P	SHAFT BASE	HANDHOLE LOCATION FROM BASE	WEIGHT (LBS)	BB MPH EPA "	90 MPH EPA *	100 MPH EPA *	BOLT HOLE CIRCLE	CATALOG HUMBER
ł	FI	(FT)	ARM(S)	(IN)	(84)	(N)	PER LUM	(SO FT)	(SQ FT)	(SQ FT)	l	l

25	33'	104	64	02	10	74	- 2.00	2.00	2.21	44"	ADOR 40
		107	0.4	3.0		19.	O.E.	3.5	0.2	I	MOES TO
**	[ev		-	1 400	40	-	- 0.04	0.00		LAALE H	1000 4
30	2.7	EZJ	0.4	10.0	- 10	13	3.2	3.2	3.2	1972	AUGUT
35	35,	258	- 6.4	10.7	18	75	35.	35.	-2.6	15	AB35 1
95	36,	292	6.6	100	18	75	3.2*	3.2	3.2	15"	AC35-1
	1 44					72	1				12::-
40	3 <i>T</i>	290	6.4	11.4	18	75	3.2*	2.9	-	151/2"	AB40-15
40 40	37°	290 330	6.4 6.6	11.4 11.5	18 18	75 75	3.2°	2.9	32	151/2"	AB40-1 AC40-1
									35.	-	

75

3.2* 3.2* 3.2° 151/2" AD45-15

151/2" AD40-25

151/2" AD45-25

-	777	- 64	9.3	10	 75 -	3.2*	25-	0.7	148	AB25-25
									_	
22.	254	6.6	9.4	18	75	32	3.5	35.	14"	AC26-26-
								•		
27"	-261	- 6.4	10.0	18	-76-	32.	1.0		1414"	AB30 26
	290	- 66	10.1	18	75	3.2*	35.	2.1	1416"	AC20-26
27	-333	60	10.2	18	75	3.2*	32.	32'	141/2"	AD30-25
	330	6.6	10.8	-10	75	95.	2.1		16"	AC35-25
32'	381	69	10.9	18	75	9.24	324	2.3	15"	AD35-25
	32'	27 261 27 290 27 323 32 330	27 261 64 27 290 66 27 323 68 32 330 66	27 261 64 100 27 290 66 10.1 27 233 60 10.2 32 330 66 100	27 261 64 100 18 27 290 66 10.1 16 27 233 68 10.2 18 32 330 66 108 10	27 261 6.4 100 18 78 27 290 66 10.1 18 75 27 233 68 10.2 18 75 22 330 66 108 18 75	27 261 6.4 100 18 78 32' 27 290 66 10.1 18 75 32' 27 333 60 10.2 18 75 32' 32' 330 66 10.0 10 75 32'	27	27	27

All poles are individually wrapped. Aluminum cap, 21/2" x 5" handhole, and enchor boils standard. Boil covers and base shrouds are optional...see accessories. Optional: 4" x 6" handhole.

75

75

32. 30

3.2* 1.5

*Poles are not rated above 3.2 EPA as the mest arms are not rated for luminaires greater than 3.2 EPA.

6.9

6.9

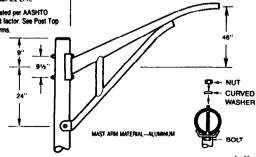
12.0

LIGHT POLE WITH TWO MAST ARMS

37

12.0

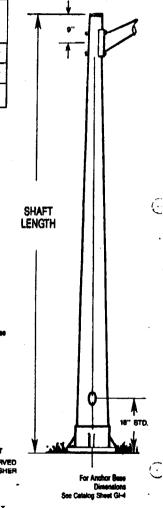
EPA recommendations are calculated per AASHTO Standards and include a 30% gust factor. See Post Top section for EPA ratings without arms.



SHAFT **LENGTH** 18" STD. For Anchor Base **Dimensions** See Catalog Sheet GI-4

See TEST DATA & ACCESSORIES Section	
Arm and attachment hardware part numbers.	

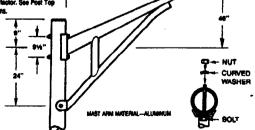
			POLE	MUETER	STANDARD	MECONIM	BIOED MAX. \$	ZE OF EACH	UNDWA		
NOMINAL MOUNTING MEIGHT (FT.)	SWFT LENGTH (FT.)	WEIGHT (LUS) MCLUDES ARMS)	SHAFT TOP (RL)	SHAFT BASE BAL)	HANDHOLE LOCATION FROM BASE (ML)	WEIGHT (LSC.) PER LUM	BO STU	89 MPH EPA " (SCL FT.)	100 MPH EPA " (80) FT.)	HOLE CIRCLE	CAPLOS
47	44	346	6.4	11:8	18	75				1512	AB47
47	44	395	6.6	11.9	18	75				15 2	AC47
47	44	470	6.9	12.0	18	75				15 12"	AD47



All poles are individually wrapped. Aluminum cap, 21/2" x 5" handhole, and anchor boits standard. Bolt covers and base shrouds are optional...see accessories. Optional: 4" x 6" handhole.

*Poise are not raised above 3.2 EPA as the most as not raised for luminaires greater than 3.2 EPA.

EPA recommendations are calculated per AASHTO Standards and include a 30% gust factor. See Post Top section for EPA ratings without arms.



See TEST DATA & ACCESSORIES Section for Meet Arm and attachment herdware part numbers.

MA-12-00

MA-12-88